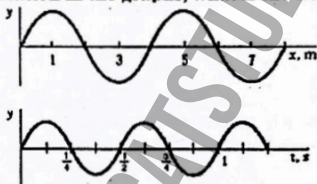




PHYSICS NMDCAT

SWIFT TEST

- Q. 1 The total energy of an electron in the first excited state of hydrogen is about -3.4eV . Its KE in this state is
(a) 3.4eV (b) 6.8eV
(c) -3.4eV (d) -6.8eV
- Q. 2 The primary winding of a transformer has 100 turns and its secondary winding has 200 turns. The primary is connected to an ac supply of 120 V and the current flowing in it is 10 A. The voltage and the current in the secondary are
(a) 240 V, 5 A (b) 240 V, 10 A
(c) 60 V, 20 A (d) 120 V, 20 A
- Q. 3 A wave is traveling with a speed v along the x axis in the positive direction. The upper graph shows the displacement y versus the distance x for a given instant of time. The lower graph shows the displacement y versus the time t for any given point x . From the information in the graphs, what is the wave speed v ?



- (a) 4m/s (b) 2m/s
(c) 6m/s (d) 8m/s
- Q. 4 A string can withstand a tension of 100 N. The greatest speed with which a body of mass 1kg can be whirled in a horizontal circle using 1m length of the string is
(a) 5 m/s (b) 7.5 m/s
(c) 10 m/s (d) 20 m/s
- Q. 5 A wheel rotates with a constant acceleration of 2 rad/s^2 . If the wheel starts from rest, the number of revolutions it makes in first ten seconds will be approximately
(a) 8 (b) 16
(c) 24 (d) 32
- Q. 6 The wavelength of fundamental mode of vibration of closed organ pipe is
(a) $2L$ (b) L
(c) $4L$ (d) $L/2$
- Q. 7 Radioactive ^{90}Sr has a half-life of 30 years. What percent of a sample of ^{90}Sr will remain after 60 years?
(a) 0% (b) 25%
(c) 50% (d) 75%
- Q. 8 In half wave rectifier, the output voltage is taken across _____
(a) Diode (b) Resistor
(c) Input voltage (d) Capacitor
- Q. 9 The half-life period of a radioactive sample depends upon
(a) Temperature (b) Nature of substance
(c) Pressure (d) All of above
- Q. 10 Output voltage of rectifier is not smooth; it can be made by a circuit known as:
(a) Wheat stone circuit (b) Filter circuit
(c) Bridge circuit (d) Ripple circuit



Q. 11 The diagram below shows an electron travelling to the left in a magnetic field.



- (a) Into the page
(b) Out of the page
(c) Towards the north pole
(d) Towards the south pole
- Q. 12 An ideal transformer is used to step up an alternating emf of 220 V to 4.4kV to transmit 6.6kW of power. The current rating of the secondary is
(a) 30A
(b) 1.5 A
(c) 3A
(d) 1A
- Q. 13 The output voltage of A.C generator at any instant is given by
(a) $V = V_0 \sin \frac{2\pi}{T} \times \omega$
(b) $V = V_0 \sin \frac{2\pi}{T} \times \frac{1}{t}$
(c) $V = V_0 \sin \frac{2\pi}{T} \times t$
(d) $V = V_0 \sin \frac{T}{2\pi} \times t$
- Q. 14 If a force of 12 N acts on a car and changes its momentum from 36 kg m/s to 60 kg m/s, the time during which this change occur will be
(a) 24 sec
(b) 12 sec
(c) 2 sec
(d) 8 sec
- Q. 15 You lift a suit case from the floor and keep it on a table. The work done by you on the suitcase does not depend on.
(a) The path taken by the suitcase
(b) Initial and final position
(c) The time taken by you in doing work
(d) Both 'a' and 'b'
- Q. 16 Doppler shift in frequency is independent of
(a) The frequency of waves produced
(b) The speed of observer
(c) The speed of source
(d) Distance from source to observer
- Q. 17 An electron of mass m is accelerated from rest through a potential difference V volts. The speed of electron will be
(a) $\sqrt{\frac{eV}{2m}}$
(b) $\frac{eV}{m}$
(c) $\sqrt{\frac{2eV}{m}}$
(d) $\sqrt{\frac{eV}{m}}$
- Q. 18 Magnetic flux would be zero when
(a) \vec{B} is parallel to \vec{A}
(b) \vec{B} is perpendicular to \vec{A}
(c) \vec{B} is along to \vec{A}
(d) Any oblique direction
- Q. 19 A constant force of 35 N is used to lift a box to a height of 3 m. This takes 15 s with the help of a small crane. How much minimum power was the crane using?
(a) 7 W
(b) 105 W
(c) 7 kW
(d) 105 kW
- Q. 20 A body of mass m is dropped from a height h above the ground. The velocity v of the body when it has lost half its initial potential energy is given by
(a) $v = \sqrt{gh}$
(b) $v = \sqrt{\frac{gh}{2}}$
(c) $v = \sqrt{2gh}$
(d) $v = 2\sqrt{gh}$
- Q. 21 In uniform circular motion, the factor that remains constant is
(a) Linear velocity
(b) Centripetal force
(c) Acceleration
(d) Speed



- Q. 22 The angular velocity of the hour hand in a mechanical watch is

- (a) $\frac{\pi}{6} \text{ rad s}^{-1}$
(b) $\frac{\pi}{120} \text{ rad h}^{-1}$
(c) $\frac{\pi}{6} \text{ rad h}^{-1}$
(d) $\pi \text{ rad s}^{-1}$

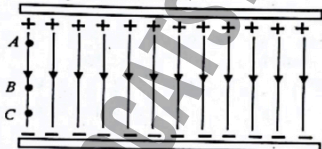
- Q. 23 When a source of sound is in motion towards a stationary observer, the effect observed is

- (a) Increase in velocity of sound
(b) Increase in frequency of sound only
(c) Decrease in velocity of sound
(d) Increase in frequency and decrease in wavelength of sound

- Q. 24 The ratio of fundamental wavelengths of one end close pipe to the both end open pipe having same lengths

- (a) 1 : 2
(b) 1 : 4
(c) 2 : 1
(d) 4 : 1

- Q. 25 In the figure below electric field between oppositely charged plates is shown. At which point the electric intensity is minimum

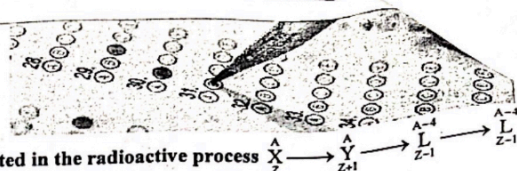


- (a) A
(b) C
(c) B
(d) All have same value
- Q. 26 A hollow metal sphere of radius 5 cm is charged such that potential on its surface is 5 V. the potential at the center of the sphere is;
- (a) 0 volt
(b) Same as at a point 5 cm away from the surface
(c) 5 volt
(d) Same as at a point 25cm away from the surface
- Q. 27 The north pole of a magnet is falling on a metallic ring as shown in the figure. The direction of induced current, if looked from bottom in the ring will be;

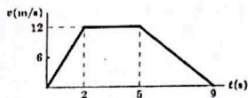


- (a) Clockwise or anti-clockwise depending on metal of the ring
(b) Anti-clockwise
(c) No induced current
(d) Clockwise
- Q. 28 The half-life of a radioactive element is 6 years. The fraction of the sample of this isotope that will remain after 30 years is

- (a) $\frac{1}{5}$
(b) $\frac{1}{16}$
(c) $\frac{1}{4}$
(d) $\frac{1}{32}$



- Q. 29 Sequence of radiation emitted in the radioactive process $X \xrightarrow{\alpha} Y \xrightarrow{\beta} L \xrightarrow{\alpha} A-4$
- (a) α, β, γ (b) β, γ, α
(c) γ, β, α (d) β, α, γ
- Q. 30 The graph represents the straight-line motion of a car. How far does the car travel between $t = 2$ s and $t = 5$ s?



- (a) 36 m (b) 4 m
(c) 12 m (d) 60 m
- Q. 31 A ball is projected at 45° its horizontal range is 10m, then the height attained by projectile is
- (a) 2 m (b) 4 m
(c) 3m (d) 2.5 m
- Q. 32 An object moves in a circle at constant speed. The work done by the centripetal force is zero because:
- (a) The distance for each revolution is zero
(b) The centripetal force is perpendicular to the displacement
(c) The average force for each revolution is zero
(d) The magnitude of the acceleration is zero
- Q. 33 The angular speed of fly wheel making 300 rev / min is _____ in (rad/sec).
- (a) π (b) 2π
(c) 4π (d) 10π
- Q. 34 Stars moving with respect to earth shows

	Blue shift	Red shift
(a)	Towards earth	Towards earth
(b)	Away from the earth	Away from earth
(c)	Towards earth	Away from earth
(d)	Away from earth	Towards earth

- Q. 35 The time required for 50Hz alternating current to reach I_0 value starting from zero is
- (a) $\frac{1}{100}$ sec (b) $\frac{1}{200}$ sec
(c) $\frac{1}{50}$ sec (d) $\frac{1}{400}$ sec
- Q. 36 Proton, electron, neutron and an α -particle are accelerated through same voltage, then de-Broglie wavelength will be larger for
- (a) Proton (b) Neutron
(c) Electron (d) α -particle
- Q. 37 When a sample of a radioactive nuclide decays, the count rate falls from 1200 to 150 in three minutes.
- What is the half-life of the radioactive nuclide?
- (a) 0.75 minutes (b) 3.0 minutes
(c) 1.0 minutes (d) 9.0 minutes



- Q. 38 Two masses m_1 and m_2 are dropped from heights h_1 and h_2 . The ratio of time taken by them to fall on earth's surface is:

(a) $\sqrt{\frac{h_2}{h_1}}$

(b) $\sqrt{\frac{m_1}{m_2}}$

(c) $\sqrt{\frac{h_1}{h_2}}$

(d) $\sqrt{\frac{m_2}{m_1}}$

- Q. 39 Force 10 N acts through a distance 20m. The force is then increased to 30 N and then acts through a further distance 40 m. Calculate the work done

(a) 1200 J

(b) 200 J

(c) 1400 J

(d) 1500 J

- Q. 40 K.E of a body become $\frac{1}{4}$ th than its initial value. What is the change in its velocity?

(a) No change

(b) Double

(c) Half

(d) Become $\frac{1}{4}$ th

- Q. 41 If E is the K.E of body moving in circle of radius r then the centripetal force may be written as

(a) $F_c = \frac{K.E}{2r}$

(b) $F_c = \frac{K.E}{2r^2}$

(c) $F_c = K.E \times 2r$

(d) $\frac{2K.E}{r}$

- Q. 42 A ball tied to the end of a string swung in a vertical circle of radius r under the action of gravity as shown in fig. What will be the tension in string at position A on circle as shown



(a) mg

(b) $mg - \frac{mv^2}{r}$

(c) $\frac{mv^2}{r} - mg$

(d) Zero

- Q. 43 Angle 10 radian is equal to

(a) 57°

(b) 573°

(c) 57.3°

(d) 5730°

- Q. 44 The ratio of frequencies in a stretched string is

(a) 1 : 2 : 3

(b) 2 : 4 : 6

(c) 1 : 3 : 5

(d) 3 : 2 : 1

- Q. 45 Ratio of pitch of sound of an approaching locomotive to the receding locomotive when speed of approach and recede is same

(a) > 1

(b) = 1

(c) < 1

(d) $= \infty$

- Q. 46 For mono atomic gas $C_v = \frac{3}{2}R$ value of C_p is

(a) $\frac{5}{2}R$

(b) R

(c) $\frac{1}{2}R$

(d) $\frac{7}{2}R$

- Q. 47 In a transformer heat is produced due to eddy current in

(a) Primary coil

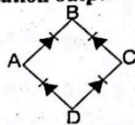
(b) Secondary coil

(c) Iron core

(d) All of these

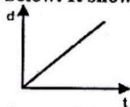


- Q. 48 Lenz's law is a consequence of the law of conservation of
(a) Charge (b) Momentum
(c) Mass (d) Energy
- Q. 49 In the diagram of full wave rectification output resistance is applied across



- (a) BD
(c) DC
(b) AC
(d) AB
- Q. 50 Which relation is correct?
- (a) $T_m = 1.44 T_{1/2}$
(b) $T_m = \frac{0.693}{\lambda}$
(c) $T_m = \frac{1}{T_{1/2}}$
(d) All of these
- Q. 51 If an electron projected in a magnetic field with a velocity v , it will experience a force given by
(a) $\vec{F} = -e \vec{v} \times \vec{B}$
(b) $\vec{F} = +e \vec{v} \times \vec{B}$
(c) $\vec{F} = -e \vec{v} \cdot \vec{B}$
(d) $\vec{F} = +e \vec{v} \cdot \vec{B}$
- Q. 52 A potentiometer is a _____
(a) Two terminal resistor
(b) Three terminal capacitor
(c) Three terminal resistor
(d) Three terminal inductor
- Q. 53 If a car is moving with velocity of 72 kmh^{-1} collides with a stationary football of negligible mass then velocity of football after collision will be approximately _____
(a) 20 ms^{-1}
(b) 40 ms^{-1}
(c) 30 ms^{-1}
(d) 80 ms^{-1}
- Q. 54 Coulomb force is _____
(a) Always repulsive
(b) Medium independent
(c) Medium dependent
(d) Very short-range force
- Q. 55 When two waves each of amplitude A moving in same direction has phase difference π superimpose then amplitude of resultant wave is _____
(a) 0
(b) $2A$
(c) A
(d) $4A$
- Q. 56 If a tuning fork is loaded with some wax, its wavelength of the emitted note
(a) Increases
(b) Decreases
(c) May increase or decrease depending upon frequency
(d) Remains same
- Q. 57 The phenomenon of interference is shown by
(a) Longitudinal mechanical waves only
(b) Transverse mechanical waves only
(c) Non-mechanical transverse waves only
(d) All the above types of waves
- Q. 58 A football of mass 0.4 kg at rest acquire a speed of 20 m/sec when kicked. The impulse imparted to the ball is
(a) 4 Ns
(b) 5 Ns
(c) 8 Ns
(d) 20 Ns
- Q. 59 Increasing the charge on the plates of a capacitor means
(a) Increasing the capacitance
(b) Increasing the potential difference between the plates
(c) Both (a) and (b)
(d) None of these

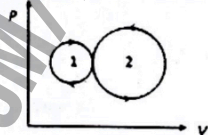
- Q. 60 Of the following, the one which has a positive temperature Co-efficient of resistance is:
(a) Carbon (b) Copper
(c) Germanium (d) An electrolyte
- Q. 61 Radioactive substance do not emit
(a) α -rays (b) γ -rays
(c) β -rays (d) Neutrons
- Q. 62 ECG records the _____ between two points on human skin
(a) Voltage (b) Current
(c) Resistance (d) Surface charge density
- Q. 63 A machine needed 1000J of energy to raise a 10 kg block at a distance of 6.0m. what is the machine efficiency?
(a) 50% (b) 80%
(c) 70% (d) 59%
- Q. 64 Block and tackle system of pulleys is used to raise a load of 500N through a height of 20 m. The work done against friction is 2000J. Calculate the work done by the effort.
(a) 10000 J (b) 15000 J
(c) 12000 J (d) 5000 J
- Q. 65 If a machine moves a load W through a distance h then the useful work done by the machine is
(a) Input (b) Efficiency
(c) Output (d) Mechanical advantage
- Q. 66 Efficiency =
(a) $\frac{\text{Load force} \times \text{Load distance}}{\text{Effort force} \times \text{Effort distance}}$ (b) $\frac{\text{Effort force} \times \text{Effort distance}}{\text{Load force} \times \text{Load distance}}$
(c) $\frac{\text{Load force} + \text{Load distance}}{\text{Effort force} + \text{Effort distance}}$ (d) $\frac{\text{Effort force} + \text{Effort distance}}{\text{Load force} + \text{Load distance}}$
- Q. 67 Efficiency of incandescent lamp
(a) 5% (b) 20%
(c) 15% (d) 30%
- Q. 68 Linear velocity or tangential velocity of any particle moving in a circular path of radius 2 m with angular velocity 8 rads^{-1} will be:
(a) 16 ms^{-1} (b) 10 ms^{-1}
(c) 4 ms^{-1} (d) 6 ms^{-1}
- Q. 69 A wheel of radius 1 m covers an angular displacement of 180. Its linear displacement is
(a) 3.14 m (b) 6.28 m
(c) π rad (d) 0.157 m
- Q. 70 An object is moving along a circular path of radius 4m. What will be its angular displacement if it moves 14m on this circular path?
(a) 5.5 radians (b) 5.0 radians
(c) 3.5 radians (d) 4.5 radians
- Q. 71 The slope of the tangent of a point on d-t graph gives the magnitude of
(a) Uniform velocity (b) Instantaneous velocity
(c) Average velocity (d) Constant velocity
- Q. 72 d-t curve of a body is shown in fig. below. It shows



- (a) Increasing velocity (b) Decreasing velocity
(c) Constant velocity (d) No velocity



- Q. 73 If d-t curve is a straight line parallel to x-axis, it means that body is
(a) Moving with constant velocity (b) Moving with variable velocity
(c) Moving with variable acceleration (d) At rest
- Q. 74 In mechanical system, the most common cause of energy lost to heat is
(a) Friction (b) Radiation
(c) Sound (d) All of these
- Q. 75 The speed of sound in the direction of wind relative to the ground is
(a) $v - v_w$ (b) v
(c) $v + v_w$ (d) v_w
- Q. 76 For one degree rise in temperature the speed of the sound will increase by
(a) 0.61 cm/s (b) 0.61 Kmh^{-1}
(c) 61 cm s^{-1} (d) 0.61 cms^{-1}
- Q. 77 The ratio of the speed of sound at 1 atmospheric pressure to 3 atmospheric pressure will be
(a) 1 : 3 (b) 1 : 1
(c) 3 : 1 (d) 1 : 4
- Q. 78 Speed of sound in a gas is proportional to
(a) Square root of isothermal elasticity (b) Isothermal elasticity
(c) Square root of adiabatic elasticity (d) Adiabatic elasticity
- Q. 79 The velocity of sound is v_s in air. If density of air is increased twice then the new velocity of sound will be
(a) v_s (b) $\sqrt{2}v_s$
(c) $\frac{v_s}{\sqrt{2}}$ (d) $\frac{3}{2}v_s$
- Q. 80 The isothermal elasticity of a medium is E_i and the adiabatic elasticity is E_a . The velocity of the sound in the medium is proportional to
(a) $\sqrt{E_i}$ (b) $\sqrt{E_a}$
(c) E_a (d) E_i
- Q. 81 If an ideal gas is isothermally expanded, its internal energy
(a) Decreases (b) Remains same
(c) Increases (d) None of these
- Q. 82 In the following indicator diagram, the net amount of work done will be



- (a) Positive (b) Zero
(c) Negative (d) Infinity
- Q. 83 Work done during isobaric expansion depends on change in
(a) Volume (b) Pressure
(c) Change in volume (d) Both 'b' and 'c'
- Q. 84 The conversion of water into steam at 100 $^\circ\text{C}$ is
(a) An isochoric process (b) Isothermal process
(c) An adiabatic process (d) Isobaric process
- Q. 85 Speed of sound in solids is greater due to
(a) High Elasticity Modulus (b) High Density
(c) Low Elasticity Modulus (d) Both (a) and (b)
- Q. 86 The electric field between the oppositely charged plates of surface charge density is σ/ϵ_0 . If one of the plates is removed, then electric field becomes
(a) Zero (b) $1/2\epsilon_0$
(c) $2\sigma/\epsilon_0$ (d) $\sigma/4\epsilon_0$

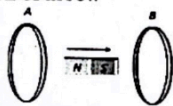
- Q. 87 The value of electric intensity between two similarly charged parallel plates as shown in the figure according to Gauss's law is



- (a) $\sigma / 2\epsilon_0$
(b) $\sigma / 6\epsilon_0$
(c) σ / ϵ_0
(d) 0
- Q. 88 Unit of reciprocal of RC will be same as
(a) Decay constant
(b) Angular frequency
(c) Time
(d) Resistivity
- Q. 89 Slope of the charging curve for a capacitor have same unit as
(a) Charge
(b) Voltage
(c) Current
(d) Capacitance
- Q. 90 When a coil of cross-sectional area A and number of turns N is rotated in a uniform magnetic field B with angular velocity ω , then the maximum emf induced in the coil will be
(a) BNA
(b) $\frac{BA\omega}{N}$
(c) $BNA\omega$
(d) zero
- Q. 91 When a wire loop is rotated in a two poles of magnetic field, the direction of e.m.f. change once in every
(a) 1 revolution
(b) $\frac{1}{4}$ revolution
(c) 2 revolution
(d) revolution
- Q. 92 A coil of area 80 cm^2 and 50 turns is rotating with 2000 revolutions per minute about an axis perpendicular to a magnetic field of 0.05 T. The maximum value of the emf developed in it is
(a) $200\pi \text{ V}$
(b) $4\pi/\sqrt{3} \text{ V}$
(c) $\frac{10}{3} \pi \text{ V}$
(d) $\frac{2}{3} \text{ V}$
- Q. 93 Back motor effect in generator is due to
(a) Torque on current carrying coil
(b) Self Induction
(c) Mutual Induction
(d) Electromagnetic Induction
- Q. 94 If five bulbs having power 100 watt each and three fans having power 50 watt each are turned ON in a house for two hours, then energy consumed by fans will be
(a) 500 Kwh
(b) 1 Kwh
(c) 1300 Kwh
(d) 0.5 Kwh
- Q. 95 What wavelength must electromagnetic radiation have if a photon in the beam is to have the same momentum as an electron moving with speed v ?
(a) $\frac{h}{mv}$
(b) mvh
(c) mvr
(d) Not possible



- Q. 96 There are n_1 photons of frequency f_1 in beam of light. In an equally energetic beam, there are n_2 photons of frequency f_2 then the correct relation is
- (a) $\frac{n_1}{n_2} = 1$ (b) $\frac{n_1}{n_2} = \frac{f_1}{f_2}$
(c) $\frac{n_1}{n_2} = \frac{f_2}{f_1}$ (d) $\frac{n_1}{n_2} = \frac{f_1^2}{f_2^2}$
- Q. 97 The uncertainty principle applicable to:
- (a) Small system only (b) Sub-atomic particles only
(c) Large system only (d) Both sub-atomic and large system
- Q. 98 If the momentum of particle is doubled, than its de-Broglie wavelength:
- (a) Doubles (b) Remain unchanged
(c) Halves (d) None of these
- Q. 99 In Davison and Germer experiment, the angle between incident beam and diffracted beam is called:
- (a) Angle of incidence (b) Angle of diffraction
(c) Glancing angle (d) Angle
- Q. 100 In an ideal transformer, the voltage and the current in the primary are 200 V, 2A and those in the secondary are 2000 V, I ampere. The value of I is
- (a) 0.2 (b) 20
(c) 1 (d) 2
- Q. 101 If current flows from top towards bottom through a wire then direction of lines of force would be:
- (a) Parallel to the wire (b) Perpendicular to wire
(c) Clockwise (d) Anti-clockwise
- Q. 102 When a charge particle enters a magnetic field, it will move on a circular path of radius
- (a) $r = \frac{qB}{mv}$ (b) $r = \frac{mv}{qB}$
(c) $\frac{qmv}{B}$ (d) $\frac{qmb}{r}$
- Q. 103 The Unit of the magnetic flux density is equal to:
- (a) Weber (b) $\frac{N}{C}$
(c) Tesla (d) $\frac{Wb}{A}$
- Q. 104 A charged particle of mass m and charge q travels on a circular path of radius r that is perpendicular to a magnetic field B . The time taken by the particle to complete one revolution is
- (a) $\frac{2\pi m}{qB}$ (b) $\frac{2\pi qB}{m}$
(c) $\frac{2\pi q^2 B}{m}$ (d) $\frac{2\pi mq}{B}$
- Q. 105 In the diagram shown if a bar magnet is moved along the common axis of two single turn coils A and B in the direction of arrow



- (a) Current is induced only in A & not in B
(b) Induced currents in A & B are in opposite directions
(c) Induced currents in A & B are in the same direction
(d) Current is induced only in B and not in A

Q. 106 The power is transmitted from a power house on high voltage ac because

- (a) Electric current travels faster at higher volts
- (b) It is difficult to generate power at low voltage
- (c) It is more economical due to less power wastage
- (d) Chances of stealing transmission lines are minimized

Q. 107 The engine of a car produces an acceleration of 6 m s^{-2} in the car. If this car pulls another car of the same mass, then the acceleration would be

- (a) 6 m s^{-2}
- (b) 3 m s^{-2}
- (c) 12 m s^{-2}
- (d) 1.5 m s^{-2}

Q. 108 Which shows the correct relation between time of flight T and maximum height H ?

- (a) $H = \frac{gT^2}{8}$
- (b) $H = \frac{8g}{T^2}$
- (c) $H = \frac{8T^2}{g}$
- (d) $H = \frac{g}{T^2}$

Q. 109 A projectile is launched at point O and follows the path OPQRS, as shown. Air resistance may be neglected.



Which statement is true for the projectile when it is at the highest point Q of its path?

- (a) The horizontal component of the projectile's acceleration is zero.
- (b) The kinetic energy of the projectile is zero.
- (c) The horizontal component of the projectile's velocity is zero.
- (d) The momentum of the projectile is zero.

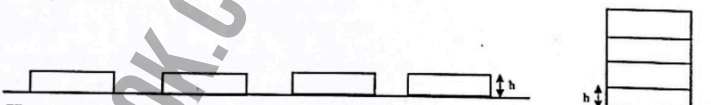
Q. 110 A body is dropped from 1000m height, if its potential energy is $8 \times 10^8 \text{ J}$. What will be its velocity on reaching the ground?

- (a) 1410 ms^{-1}
- (b) 1.41 ms^{-1}
- (c) 141 ms^{-1}
- (d) 9800 ms^{-1}

Q. 111 In freely falling system, if potential energy is equal to kinetic energy. Then force of friction of air will

- (a) be negligible
- (b) be zero
- (c) be maximum
- (d) not be predicted

Q. 112 Initially four identical uniform block, each of mass m and thickness h , are spread on a table,



How much work is done on the block in stacking them on top of one another?

- (a) $2mgh$
- (b) $3mgh$
- (c) $4mgh$
- (d) $6mgh$

Q. 113 Half-life of radioactive nucleus ${}_{86}\text{Ra}^{226}$ is $0.693 \times 10^{11} \text{ s}$, then decay constant is?

- (a) 10^{-11} s^{-1}
- (b) 10^{-11} s^{-1}
- (c) $0.693 \times 10^{-11} \text{ s}^{-1}$
- (d) 10^{-10} s^{-1}

Q. 114 The prominent lines of the Balmer series lie in

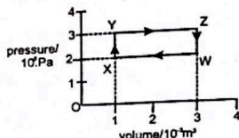
- (a) Visible
- (b) Ultraviolet
- (c) Infrared
- (d) Red

Q. 115 If a ball is projected from origin at angle 30° with horizontal in the absence of air friction, then which statement about its components of velocity during flight will be true

- (a) $v_x = \text{constant}$, $v_y = \text{constant}$
- (b) $v_x = \text{constant}$, $a_x \neq \text{constant}$
- (c) $v_x = \text{constant}$, $a_y \neq \text{constant}$
- (d) $v_x = \text{constant}$, $a_y = \text{constant}$



- Q. 116 A gas undergoes the cycle of pressure and volume changes $W \rightarrow X \rightarrow Y \rightarrow Z \rightarrow W$ shown in the diagram



What is the net work done by the gas?

- (a) -600 J
(b) 0 J
(c) -200 J
(d) 200 J
- Q. 117 What must be surface charge density to have 1000 NC^{-1} electric field near an infinite sheet of the charge having uniform distribution
- (a) 1000 Cm^{-2}
(b) $17.6 \times 10^{-9} \text{ Cm}^{-2}$
(c) 20 Cm^{-2}
(d) $16.6 \times 10^{-9} \text{ Cm}^{-2}$
- Q. 118 Working Principle of the generator is
- (a) Torque on current carrying coil
(b) Electromagnetic Induction
(c) Mutual Induction
(d) Self Induction
- Q. 119 Ratio of the speed of Lyman series photon to Balmer series photon is
- (a) equal to 1
(b) Greater than 1
(c) Less than 1
(d) infinity
- Q. 120 To find longest wavelength radiation in Balmer series, the value of n used is
- (a) 2
(b) 4
(c) 3
(d) ∞

MCQ'S RESPONSE FOR

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